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Original Article

Experiences of People with Dysphagia Using Stabilized Edible Foam in Home-Based Hospitalization: A Compensatory Approach for Chronic Patients

Mauricio Venegas Ramírez [a, *], Francisco Freire Figueroa [b], Marcela Labra González [a], Michelle Soto Cartes [a], Valeria Lizama Silva [a], Felipe Briones Torres [a], Francisco Aguirre Montero [a] and Oscar Calderón Alvarado [a]

[a] *Hospital Sótero del Río, Chile.*
[b] *Servicio de Salud Metropolitano Occidente, Ministerio de Salud, Chile.*

ABSTRACT

Dysphagia is a disorder that impairs swallowing, leading to physical, emotional, and social consequences such as malnutrition, aspiration pneumonia, and social isolation. While traditional interventions can be effective, they often fall short in addressing the complex needs of patients with severe dysphagia. This study explores an innovative approach: the use of stabilized edible foam (SEF) to stimulate swallowing and enhance quality of life in patients with severe dysphagia. A qualitative study was conducted with 11 patients from the Home-Based Hospitalization Unit at Sótero del Río Hospital. Over the course of one week, each patient received SEF made from their preferred liquid, following a specific protocol. Semi-structured interviews were used to collect patient experiences, which were then coded and analyzed qualitatively. Data triangulation was used to strengthen the validity of the findings. Participants reported improvements in sensory perception and swallowing ability, as well as a reduced choking sensation. Emotionally, there was a decrease in frustration and social isolation, and a high level of satisfaction with the treatment, which supported therapy adherence. Although the results are not generalizable due to the small sample size, the use of SEF appears to be a promising strategy for managing severe dysphagia. Its high acceptance suggests it could effectively complement conventional treatments, offering an innovative approach that enhances both swallowing function and emotional well-being.

Keywords:
Dysphagia; Home-Based Hospitalization; Stabilized Edible Foam; Sensory Stimulation

Experiencias de los pacientes con disfagia con el uso de la espuma aireadora en la hospitalización domiciliaria: "Un abordaje compensatorio en usuarios crónicos"

RESUMEN

La disfagia es un trastorno que afecta la capacidad de tragar, con consecuencias físicas, emocionales y sociales, como desnutrición, neumonía por aspiración y aislamiento social. Las intervenciones tradicionales, aunque efectivas, no siempre abordan todas las necesidades de los pacientes, especialmente en casos severos. Este estudio explora una intervención innovadora: el uso de espumas aireadoras para estimular la deglución y mejorar la calidad de vida en pacientes con disfagia severa. Se realizó un estudio cualitativo con 11 pacientes de la Unidad de Hospitalización Domiciliaria del Hospital Sótero del Río. Durante una semana, se administró una espuma aireadora elaborada con el líquido preferido del paciente, siguiendo un protocolo específico. Se utilizaron entrevistas semiestructuradas para recopilar experiencias, las cuales se codificaron y analizaron cualitativamente, empleando triangulación de datos para reforzar la validez. Los participantes reportaron una mejora en la percepción sensorial y en la capacidad de deglución, disminuyendo la sensación de atragantamiento. Emocionalmente, se observó una reducción de frustración y aislamiento, y una alta satisfacción con la intervención, favoreciendo la adherencia al tratamiento. Aunque los resultados no son generalizables debido al tamaño de la muestra, la intervención con espuma aireadora se presenta como una opción prometedora para el manejo de la disfagia severa. Su alta aceptación sugiere que puede complementar los tratamientos convencionales, ofreciendo un enfoque innovador que mejora tanto la función deglutoria como el bienestar emocional de los pacientes.

Palabras clave:
Disfagia; Hospitalización Domiciliaria; Espuma Aireada; Intervención Sensorial

**Corresponding Author: Mauricio Venegas Ramírez*
Email: mauriciovenegas.r@gmail.com

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INTRODUCTION

Dysphagia is a disorder that impairs the ability to swallow food and liquids, significantly impacting the quality of life of those who experience it. This condition, resulting from various medical and neurological disorders, affects not only physical health but also emotional and social well-being (Ekberg et al., 2002).

The swallowing process, which requires complex coordination between muscle and neurological functions, is compromised in dysphagia, potentially leading to serious complications such as malnutrition, aspiration pneumonia, and weight loss. Moreover, dysphagia can have an emotional effect, causing anxiety, frustration, and negatively impacting self-esteem.

Socially, dysphagia can interfere with daily interactions, such as eating in public or attending social events involving food. These difficulties may lead to feelings of isolation and alienation, thereby reducing the individual's overall quality of life (Newman et al., 2016). It is therefore crucial to address dysphagia through a comprehensive approach, combining conventional therapeutic methods with innovative interventions, in order to improve feeding skills and promote emotional and social well-being among patients. Although several strategies have been explored, there are currently no studies in Chile or other countries specifically supporting the efficacy and safety of stabilized edible foam (SEF) in the management of severe dysphagia.

The swallowing process requires the coordination of multiple muscle groups to transport food from the mouth to the stomach while ensuring airway protection (Clavé & Shaker, 2015; Tobar et al., 2016). It comprises four phases: the first two—the oral preparatory and oral phases—are voluntary and focus on forming the food bolus and propelling it toward the oropharynx (Bakheit, 2001; Carrau et al., 2016; Logemann, 1998; Murry et al., 2020). The pharyngeal and esophageal phases are involuntary, facilitating the safe passage of the bolus into the stomach (Bakheit, 2001; González & Bevilacqua, 2009; Hughes, 2003; Logemann, 1993, 1998; Murry et al., 2020).

Dysphagia may be caused by various pathologies affecting any of the phases of swallowing. This disorder is often associated with conditions such as Alzheimer's disease, Parkinson's disease, and traumatic brain injury, and can lead to severe complications, including obstruction, aspiration pneumonia, malnutrition, and dehydration (Carrau et al., 2016; Daniels, 2006; Daniels et al., 2000; González & Araya, 2000; Martin-Harris, 2006; Murry et al., 2020; Nimmons et al., 2016).

There are no available data in Chile on the prevalence of dysphagia among older adults; however, international estimates suggest rates ranging between 8% and 16% (Nimmons et al., 2016). Similarly, no published evidence in Chile or internationally examines the use of SEF as an intervention for severe dysphagia.

Traditional dysphagia therapy aims to achieve safe and efficient swallowing, optimizing nutrition while minimizing risks. It includes postural strategies, oral sensory stimulation, rehabilitation exercises, and swallowing maneuvers (Cámpora & Falduti, 2012; Civit et al., 2013; Clavé et al., 2004; Lembo, 2016; Sociedad Española de Geriatría y Gerontología, 2014). In contrast, less conventional approaches have explored the use of SEF to provide oral stimulation for patients with severe dysphagia. These foams promote gustatory and olfactory stimulation (Civit et al., 2013; Clavé et al., 2004). These are important components of dysphagia treatment as they enhance both the safety and comfort of the swallowing process. One type of edible foam, *Air Instant*, has proven helpful in cases of enteral or parenteral nutrition, as it stimulates the swallowing reflex without being ingested.

Stabilized edible foams are dispersed systems composed of a gaseous phase (air) and a liquid phase (surfactant), resulting in low density and high apparent viscosity. These foams exhibit non-Newtonian rheological behavior with viscoelastic and thixotropic properties that vary according to shear rate. More specifically, the size and distribution of their bubbles influence their rheological characteristics. The structure of the foam depends on the size and shape of the bubbles, while the adsorption of surfactants stabilizes the liquid–gas interface. Factors such as surfactant concentration, temperature, and shear rate also affect foam behavior (McClements, 2004).

In summary, this innovative approach expands therapeutic options, allowing interventions to be tailored to individual needs and thereby improving their quality of life. Although the international literature references similar methods, there is currently no direct evidence supporting the efficacy of SEF for this purpose.

Objective

This study aimed to analyze the experiences of patients with severe dysphagia, within the context of home-based hospitalization, regarding the use of stabilized edible foam (SEF). To this end, it explores patients' emotional perceptions of their quality of life before and after implementing this approach. It also aims to identify strategies employed by patients to taste flavors

and facilitate swallowing before the intervention with SEF. Additionally, the study assesses the effectiveness of SEF in improving patients' perception of their swallowing function. Finally, it analyzes the factors influencing treatment adherence to understand better the impact of SEF on clinical practice and patient experience.

This approach will provide a comprehensive understanding of the utility and acceptability of SEF in the management of severe dysphagia in home-care settings.

METHOD

Interviews were conducted with eleven patients hospitalized in the Home Hospitalization Unit of Hospital Sótero del Río. This was completed in three months in 2024. Data saturation, which served as the criterion for closing the sampling process, was defined based on two aspects: the integration and density of the emerging theory, and the theoretical sensitivity of the analyst. These criteria ensured that the sample achieved sufficient depth and representativeness to address the study's objectives (Mieles-Barrera et al., 2012).

Following the interviews, the 11 patients underwent at least three intervention sessions, scheduled over the course of one week. Each session lasted between 20 and 30 minutes. The intervention protocol consisted of preparing and administering the SEF, following a structured procedure (Table 1). The foam is visually presented in Figure 1 (Appendix 1).

The professional team in charge of the intervention was led by a speech and language therapist (SLT), who played a central role throughout the process as the specialist in swallowing evaluation and treatment. This professional was responsible for assessing each patient's cognitive status to determine their ability to participate in the intervention. Additionally, they applied the aeration technique to the liquids and adapted strategies according to individual needs, thereby ensuring safe and effective administration. Furthermore, the SLT was responsible for training the rest of the healthcare team, ensuring that all professionals understood the methodology and its relevance for dysphagia management. A group of nurses received training on the foam aeration technique, the underlying principles of dysphagia, and the interview methodology. Although the nurses did not participate in the direct application of the aerated liquid, their training enabled them to conduct structured interviews with patients to collect information regarding their experience, tolerance, and potential difficulties during the intervention.

To ensure coherence and effectiveness, the researchers designed a standardized script for the initial contact with patients, explaining the study's objectives and addressing any questions. Additionally, pretest interviews were conducted with professionals from various disciplines and with patients with dysphagia. This process allowed for methodological validation and optimization of the technique.

Table 1. Stabilized Edible Foam Protocol

Step	Description
1	Pour 50 ml of the preferred liquid into a narrow, tall glass (approximately 300 ml capacity).
2	Dissolve one 2 g sachet of AIR Instant (soy lecithin/maltodextrin) in the chosen liquid (e.g., soft drinks, juices, coffee, etc.).
3	Apply the aeration device using its micro-perforated pipette.
4	Allow 2 to 3 minutes for the foam to form (see Appendix 1).
5	Administer the foam using a 5 ml spoon, waiting 30 seconds between each dose.
6	Clean, discard, and store all materials used.

Participants

Inclusion Criteria

- Adult patients (aged 18 years or older) with the capacity to provide informed consent and authorization for evaluation by a qualified health professional.
- Patients who, during the initial visit, scored 19 points or higher on the Montreal Cognitive Assessment (MoCA), which evaluates cognitive function.
- Medical confirmation of severe dysphagia, diagnosed by a qualified professional through objective ENT assessments (nasofibroscopy) and speech-language evaluations using the Food Intake Level Scale (FILS), scoring 1, 2, or 3 (Appendix 3).
- Patients meeting the criteria for severe dysphagia (FILS 1–3) who required specific feeding interventions and management.
- Patients in home-based hospitalization who required the support of a caregiver.

Exclusion Criteria

- Declining participation.
- Failure to sign the informed consent form.

- Failure to provide verbal consent to participate in the interview and be recorded.
- Patients scoring below 19 points on the Montreal Cognitive Assessment (MoCA), as this may indicate moderate or severe cognitive impairment that could affect comprehension and participation in the study (Appendix 2).

Procedure

The data collection was conducted using semi-structured interviews. This technique is designed to be flexible and open, allowing participants to express their views freely and deviate from the script when new themes emerge. Questions were developed a priori and based on theoretical foundations (Bonilla-García & López-Suárez, 2016; Mieles-Barrera et al., 2012). The interviews explored categories such as sensory perception, feeding satisfaction, and treatment compliance. The researcher kept the focus on central themes, guiding the conversation naturally. To ensure replicability, the full interview and the standardized interviewer script are included in Appendix 4.

Pretest interviews were conducted with ten professionals from various disciplines (medicine, nursing technicians, physiotherapy, and nursing) and with five patients diagnosed with dysphagia in home-based hospitalization. These preliminary interviews were reviewed and analyzed to validate the instrument linguistically and confirm the established methodology.

All interviews were conducted in a quiet and comfortable environment, ensuring privacy and minimizing interruptions. The sessions were carried out in person, lasting on average 10 to 15 minutes, and were audio-recorded following verbal and written consent. Ethical approval was obtained from the Ethics Committee of *Servicio de Salud Metropolitano Sur Oriente* (SSMSO), ensuring compliance with bioethical principles.

Responses were coded and transformed into nominal qualitative categorical variables, which were organized into analysis matrices and a codebook. Data were recorded in an Excel spreadsheet and the Atlas.ti software was used to generate matrices for each question (Appendix 5). Participants were assigned an ID code, accessible only to the research team, to ensure confidentiality.

Interviews were transcribed verbatim, and qualitative analysis followed an inductive approach, structured in three stages (Mieles-Barrera et al., 2012):

1. Open Coding: Identification and labeling of text segments that represented key concepts and meaningful experiences.
2. Axial Coding: Grouping of similar codes into broader categories and establishing relationships among them.
3. Selective Coding: Identification of central themes emerging from the analysis, leading to the development of a grounded theory that synthesizes the main findings.

Data triangulation was conducted using three primary sources: perspectives of patients with dysphagia, feedback from their caregivers, and observations from healthcare professionals. This approach ensured multiple validation points (Mayan, 2001; Mieles-Barrera et al., 2012).

RESULTS

Eleven patients were interviewed. The mean age of the group was 64 years (range: 30–70 years). All participants presented with severe dysphagia, primarily associated with stroke and oncological diseases such as laryngeal cancer and oropharyngeal tumors. These conditions were linked to neurological or structural deficits affecting the oral, pharyngeal, and esophageal swallowing phases. All patients required a gastrostomy for nutritional support.

Five selective categories representing key thematic areas were identified from the analyses:

***Emotional Impact*:** The swallowing difficulties generated a profound emotional effect on participants. Frustration, sadness, and discouragement were recurring emotions, especially during social contexts and celebrations like birthdays and family gatherings. This emotional burden was intensified by the inability to enjoy food and beverages fully. Following the SEF intervention, patients reported a notable improvement in emotional well-being, with a significant reduction in negative feelings.

> *"Yes, because sometimes it frustrates me, the longing." (Male, 53 years)*
>
> *"Yes, especially at gatherings and birthday celebrations. In social life." (Female, 33 years)*
>
> *"Yes, it affects me. I often feel low and discouraged." (Male, 78 years)*
>
> *"Yes, it makes me sad." (Male, 19 years)*

Strategies Prior to the Intervention: Before the intervention with SEF, patients used various strategies to experience flavors and facilitate swallowing. These methods included wetting their lips

with juice, chewing ice chips, or, in some cases, applying specific techniques taught by professionals. These approaches illustrate the patients' individual efforts to adjust to their condition and find relief, though their effectiveness varied across cases.

"Wetting my lips with some juice." (Male, 53 years)

"Ice chips, chewing ice cubes, and baby biscuits with the speech therapist." (Female, 33 years)

"Flavored ice, fruit purées." (Male, 90 years)

Positive Intervention Experience: All participants described their experience with SEF as highly positive. Their testimonies highlight the satisfaction of both themselves and their caregivers with the improvement in sensory perception and the restoration of the pleasure of eating.

"It was an explosion of flavor because my first intervention was with Coca-Cola… it was delicious." (Male, 53 years)

"I felt very happy… it was an emotional sensation, like joy, because I could taste flavor again." (Female, 64 years)

"I liked feeling the taste of fruits." (Female, 65 years)

"It changed my mood, and when they asked if I liked it, I said yes—so tasty!" (Male, 78 years)

Improvements in Swallowing Function: Participants reported improvements in their ability to swallow foods of different consistencies. These gains in swallowing function translated into a greater sense of safety while eating and a reduction in choking sensations, fostering increased independence in daily activities.

"Today I woke up with the feeling that I could swallow more than on other days." (Male, 53 years)

"I've noticed myself more cheerful." (Male, 72 years)

"I felt more confident." (Female, 64 years)

"The flavor lingered in my mouth." (Female, 72 years)

Treatment Adherence: The high levels of satisfaction with SEF therapy were a key factor in treatment adherence. Patients were strongly motivated to continue the therapy, valuing the positive sensory experience and the tangible benefits. Overall satisfaction with the intervention contributed to high adherence rates and consistent follow-up with therapeutic recommendations, reflecting a positive impact on both motivation and quality of care.

"I felt very motivated to continue with treatment because I noticed improvements." (Female, 51 years)

"The experience with the foam made me want to keep trying more." (Male, 19 years)

DISCUSSION

Dysphagia is a disorder that compromises the ability to swallow and considerably impacts quality of life and emotional well-being. The physical complications associated with dysphagia—such as malnutrition, dehydration, weight loss, and aspiration pneumonia—are well known. However, there is also a significant emotional impact, including anxiety, frustration, and decreased self-esteem, which are further exacerbated by the difficulty of participating in social activities that revolve around food (Ekberg et al., 2002; Newman et al., 2016). Within this context, intervention using stabilized edible foam (SEF) is an innovative approach, offering new perspectives for the comprehensive management of dysphagia.

The results of this study suggest that SEF intervention provides notable benefits in sensory, emotional, and functional domains. Participants reported a significant improvement in sensory perception, which in turn increased their pleasure in eating. This positive experience not only enhanced swallowing function by reducing the choking sensation and increasing safety during feeding but also improved emotional well-being by restoring the pleasurable experience of food consumption.

When compared to conventional dysphagia management strategies such as postural techniques, swallowing exercises, and dietary modifications (Cámpora & Falduti, 2012; Clavé et al., 2004), SEF introduces an innovative and complementary dimension. Although traditional methods are effective, they may not be sufficient for all patients, particularly those with severe dysphagia, who experience significant functional and emotional limitations. In this regard, SEF is a valuable alternative, especially when other approaches are limited.

No studies have been identified to date that comparatively analyze the outcomes of intervention with SEF with other dysphagia treatment modalities like postural techniques or swallowing exercises. The lack of comparative evidence limits our ability to draw conclusions regarding its potential superiority. Therefore, future studies should assess the effectiveness of SEF interventions more robustly and contrast them with other dysphagia management methods.

Finally, another relevant finding from this study is the high treatment adherence reported by participants. Satisfaction and motivation derived from the positive sensory experience were key factors contributing to sustained participation in therapy. Furthermore, improvements in the swallowing function may also contribute to a high adherence rate. This could improve compliance with clinical recommendations and quality of care.

CONCLUSION

The use of stabilized edible foam (Air Instant) represents a promising addition to the treatment of dysphagia. Preliminary results indicate that this innovative technique may not only enhance sensory perception and swallowing function but also exert a positive impact on patient satisfaction and treatment adherence. However, further research involving a larger and more diverse population is required to validate these findings and to assess the long-term effects of this intervention. Finally, to maximize the benefits in dysphagia management, it is recommended that this technique be integrated into clinical practice, accompanied by ongoing evaluation of its effectiveness and patient experience.

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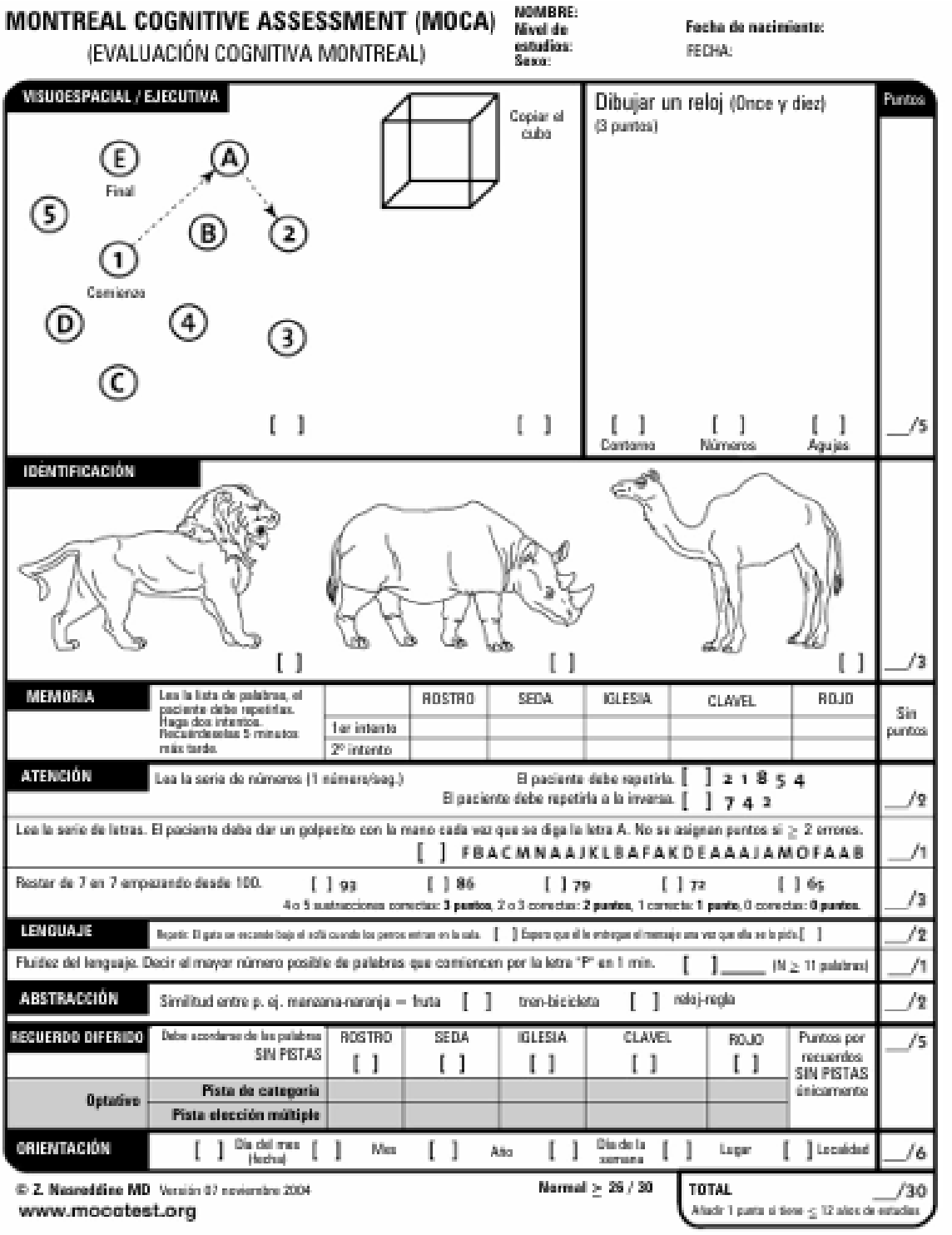
APPENDIX 1. Representation of the Stabilized Edible Foam

APPENDIX 2. Montreal Cognitive Assessment (MOCA).



MONTREAL COGNITIVE ASSESSMENT (MOCA)

(EVALUACIÓN COGNITIVA MONTREAL)

NOMBRE:
Nivel de estudios:
Sexo:
Fecha de nacimiento:
FECHA:

VISUOESPACIAL / EJECUTIVA

Copiar el cubo

Final
Comienzo

Dibujar un reloj (Once y diez)
(3 puntos)

[ ] Contorno [ ] Números [ ] Agujas

Puntos: __/5

IDENTIFICACIÓN

[ ] [ ] [ ]

__/3

MEMORIA

Lea la lista de palabras, el paciente debe repetirlas. Haga dos intentos. Recuérdeselas 5 minutos más tarde.

	ROSTRO	SEDA	IGLESIA	CLAVEL	ROJO
1er intento					
2º intento					

Sin puntos

ATENCIÓN

Lea la serie de números (1 número/seg.) El paciente debe repetirla. [ ] 2 1 8 5 4

El paciente debe repetirla a la inversa. [ ] 7 4 2

__/2

Lea la serie de letras. El paciente debe dar un golpecito con la mano cada vez que se diga la letra A. No se asignan puntos si ≥ 2 errores.

[ ] F B A C M N A A J K L B A F A K D E A A A J A M O F A A B

__/1

Restar de 7 en 7 empezando desde 100. [ ] 93 [ ] 86 [ ] 79 [ ] 72 [ ] 65

4 o 5 sustracciones correctas: **3 puntos**, 2 o 3 correctas: **2 puntos**, 1 correcta: **1 punto**, 0 correctas: **0 puntos**.

__/3

LENGUAJE

Repetir: El gato se escondía bajo el sofá cuando los perros entraron en la sala. [ ] Espero que él le entregue el mensaje una vez que ella se la pida. [ ]

__/2

Fluidez del lenguaje. Decir el mayor número posible de palabras que comiencen por la letra "P" en 1 min. [ ]_____ (N ≥ 11 palabras)

__/1

ABSTRACCIÓN

Similitud entre p. ej. manzana-naranja = fruta [ ] tren-bicicleta [ ] reloj-regla

__/2

RECUERDO DIFERIDO

Debe acordarse de las palabras SIN PISTAS	ROSTRO	SEDA	IGLESIA	CLAVEL	ROJO	Puntos por recuerdos SIN PISTAS únicamente
	[ ]	[ ]	[ ]	[ ]	[ ]	
Opcional: Pista de categoría						
Opcional: Pista elección múltiple						

__/5

ORIENTACIÓN

[ ] Día del mes (fecha) [ ] Mes [ ] Año [ ] Día de la semana [ ] Lugar [ ] Localidad

__/6

© Z. Nasreddine MD Versión 07 noviembre 2004

www.mocatest.org

Normal ≥ 26 / 30

TOTAL __/30

Añadir 1 punto si tiene ≤ 12 años de estudios

APPENDIX 3. Fujishima's Food Intake Level Scale (FILS)

ESCALA FUNCIONAL DE LA DEGLUCIÓN DE FUJISHIMA O FILS

GRADO DE SEVERIDAD	NIVEL	DESCRIPCIÓN
Severo (Alimentación por Vía Oral Imposible)	1	La deglución es difícil o imposible. Existen signos de aspiración y no existe reflejo de deglución. No es posible realizar entrenamiento de la deglución.
	2	Presencia de aspiración, pero tiene la capacidad de rehabilitarse desde el punto de vista de la deglución de manera indirecta en un comienzo, no usando alimentos.
	3	A pesar de que existen signos clínicos de aspiración, se puede realizar entrenamiento directo de la deglución, pudiendo alimentarse sólo con pequeñas cantidades de comida. El resto del aporte es por vía enteral.
Moderado (Alimentación por Vía Oral y Alternativa)	4	La alimentación es enteral, pero es capaz de recibir aportes vía oral durante el tratamiento fonoaudiológico o por gusto, en pequeñas cantidades con cuidadores entrenados.
	5	Alimentación vía oral 1 a 2 veces al día con alimentos adaptados de acuerdo al tratamiento. Vía de alimentación enteral para el agua y el resto de las comidas.
	6	Puede alimentarse vía oral 3 veces al día con alimentos acordes a los indicado en el tratamiento fonoaudiológico. El agua se aporta vía enteral.
Leve (Alimentación Oral Exclusiva)	7	Come 3 comidas por la vía oral. El agua se da con espesante y no se usa vía enteral.
	8	Puede comer normalmente 3 veces al día, salvo para alimentos específicos que dificultan la deglución. Puede consumir agua.
	9	No hay restricciones de dieta y todas las comidas son por vía oral con supervisión.
	10	No hay restricciones de dieta. El paciente ingiere todo con normalidad.

APPENDIX 4. Standardized Interview Script and Interview Guide

Standardized Script for Interviewers

Introduction

Good morning/afternoon, my name is (interviewer's name), and I am part of the team conducting interviews with patients participating in this study. The purpose of this interview is to learn about your experience with the intervention using stabilized edible foam, as well as your perception of any changes you may have noticed. Your responses will help us evaluate and improve this intervention.

The interview is structured into four sections:

1. Background: I will ask you about your situation prior to the intervention.
2. Experience with the Intervention: You will be able to describe your experience with the foam.
3. Perceived Changes: You will tell us whether you noticed any changes related to the therapy.
4. Expectations and Suggestions: You can share whether your expectations were met and offer any comments to improve the intervention.

All responses are valid; we kindly ask you to answer as honestly as possible. This interview will take no longer than [estimated time]. Do you agree to begin?

Interview Procedure

Conduct the interview by reading the questions verbatim.

Closing the Interview

Thank you very much for your time and honesty in answering this interview. Your input is very valuable in helping us improve this intervention and provide better care. If you have any questions or comments, please share them now or contact us via the emails and/or phone numbers provided in the informed consent form. Once again, thank you for your participation.

Patient Interview Guide

1. Background
   1.1. Have your daily swallowing difficulties affected your mood?
   1.2. What strategies have you used to try new flavors or textures before the intervention with SEF?
2. Experience with the Intervention
   2.1. Could you describe the sensations or experiences you had while using the aerated foam?
3. Perceived Changes
   3.1. Have you noticed any changes in your satisfaction with this therapy?
      - Greater satisfaction (yes/no)
      - Sense of smell (yes/no)
      - Sense of taste (yes/no)
      - Others: _____
4. Expectations and Suggestions
   4.1. Were your expectations met during this experience?
   4.2. Is there any aspect you would like to change or improve regarding this intervention?
   4.3. Would you recommend this intervention? (yes/no)

APPENDIX 5. Coding Matrix Summary

Code	Subcode	Attribute	Quotation	Observations	Code
Emotional Impact	Frustration	Intensity	"Yes, because it frustrates me suddenly. The longing one has."	Patient expresses high frustration	Emotional Impact
Emotional Impact	Sadness	Impact on social life	"Yes, especially during meetings and birthday celebrations. In social life."	Patient reports a negative impact on social events	Emotional Impact
Prior Strategies	Professional Techniques	Effectiveness	"Ice chips, biting ice cubes, and baby biscuits with the speech therapist."	Patient reports using techniques learned from professionals	Prior Strategies
Prior Strategies	Self-Management	Variety	"Moistening my lips with some juice."	Patient describes a personal strategy to improve swallowing	Prior Strategies
Positive Experience with Intervention	Taste Sensation	Intensity	"It was an explosion of flavor because my first intervention was with Coca-Cola… it was very enjoyable."	Patient reports a very intense sensory experience	Positive Experience with Intervention
Positive Experience with Intervention	Emotional	Joy	"I felt very happy… a sense of excitement that I was able to taste something again."	Patient expresses great joy and satisfaction	Positive Experience with Intervention
Improvements in Swallowing Function	Safety	Increase	"I felt more confident."	Patient reports greater confidence while eating	Improvements in Swallowing Function
Improvements in Swallowing Function	Sensory Perception	Improvement	"The taste lingered in my mouth."	Patient describes improved taste perception	Improvements in Swallowing Function
Treatment Adherence	Motivation	High	"I felt very motivated to continue with the treatment because I noticed improvements."	Patient expresses strong motivation to continue therapy	Treatment Adherence
Treatment Adherence	Satisfaction	High	"The experience with the foam has made me eager to try more."	The patient shows great satisfaction with the therapy	Treatment Adherence